

Compound Combinations

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by the ordinary sulphuret of antimony was equal to half the proportion of that previously in the sulphuret, in which case the new sulphuret would consist of *single* proportionals.

430. When this new sulphuret was dissolved in muriatic acid, although a little antimony separated, yet it appeared to me that a true protochloride, consisting of *single* proportionals, was formed, and from that, by alkalies, etc., a true protoxide, consisting also of *single* proportionals, was obtainable. But I could not stop to ascertain this matter strictly by analysis.

431. I believe, however, that there is such an oxide; that it is often present in variable proportions in what is commonly called protoxide, throwing uncertainty upon the results of its analysis, and causing the electrolytic decomposition above described.

432. Upon the whole, it appears probable that all those binary compounds of elementary bodies which are capable of being electrolysed when fluid, but not whilst solid, according to the law of liquido-conduction (130), consist of *single* proportionals of their elementary principles; and it may be because of their departure from this simplicity of composition, that boracic acid, ammonia, perchlorides, periodides, and many other direct compounds of elements, are indecomposable.

433. With regard to salts and combinations of compound bodies, the same simple relation does not appear to hold good. I could not decide this by bisulphates of the alkalies, for as long as the second proportion of acid remained, water was retained with it. The fused salts conducted, and were decomposed; but hydrogen always appeared at the negative electrode.

434. A biposphate of soda was prepared by heating, and ultimately fusing, the ammonia-phosphate of soda. In this case the fused bisalt conducted, and was decomposed; but a little gas appeared at the negative electrode; and though I believe the salt itself was electrolysed, I am not quite satisfied that water was entirely absent.

435. Then a biborate of soda was prepared; and this, I think, is an unobjectionable case. The salt, when fused, conducted, and was decomposed, and gas

appeared at both electrodes:
even when the boracic acid was increased
to three proportionals,
the same effect took place.
436. Hence this class of compound
combinations does not

¹ In relation to this and the three preceding paragraphs,
and see Berzelius's correction of the nature of the supposed ⁵³⁶
new sulphuret and
oxide, *PML. Mag.* 1836, vol. viii. 476.—December 1838.